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Calibration of an HTS based LOX 400mm level sensor

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The cryogen level measurement for space missions is very crucial. At the same time, the weight of the sensor should be less because the payload fraction would be reduced; resulting in increase in the mission cost. An attempt was made to develop HTS based level sensor of 400 mm for LOX measurement. In the initial phase of testing, the sensor goes to normal state due to increase in temperature as a result of the pressurization of the LOX cryostat. In order to maintain the sensor in the superconducting state, a test cryostat with minimum heat transfer from ambient was designed to have stable LOX level to provide thermal stability to HTS based LOX sensor. The calibration of developed sensor is carried against diode array to verify its linearity and performance under different pressures. The sensor consists of HTS wire with nichrome heater wire tapes. The calibrations are carried out with and without heating. The automatic data logging is done by using the program developed in LabVIEW 11.0.

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